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ENHANCING RABIES CONTROL THROUGH NOVEL MOBILE TECHNOLOGY

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The World's First Dedicated Rabies App

An estimated 59,000 people die of rabies annually¹. Dog vaccination has been repeatedly demonstrated to effectively eliminate rabies from large geographic areas over the past half century, however the failure for its widespread uptake means that rabies continues to affect developing countries across Africa and Asia. Smartphone technology is increasingly being used to replace paper records in field epidemiological settings, bringing advantages in improved documentation, data storage and near-real time reporting (Fig 1), however its application in the setting of rabies control is currently limited.

Mission Rabies is a UK based charity implementing rabies control interventions through mass dog vaccination, education and canine rabies surveillance in rabies endemic countries. Since its launch in September 2013 the group have been using mobile technology to enhance the monitoring and evaluation of mass dog vaccination campaigns. Early field experience using was used to develop a tailor made smartphone App and Backend Web platform, designed to improve project management and coordination across multiple projects in Africa and Asia. Since the Mission Rabies App went live in November 2014, over 216,000 individual dog vaccinations have been recorded on the application in projects in India, Sri Lanka, Thailand, Malawi, Tanzania and Uganda (Fig 2).

This poster summarises the key areas in which mobile technology benefits the management of Mission Rabies mass vaccination projects.

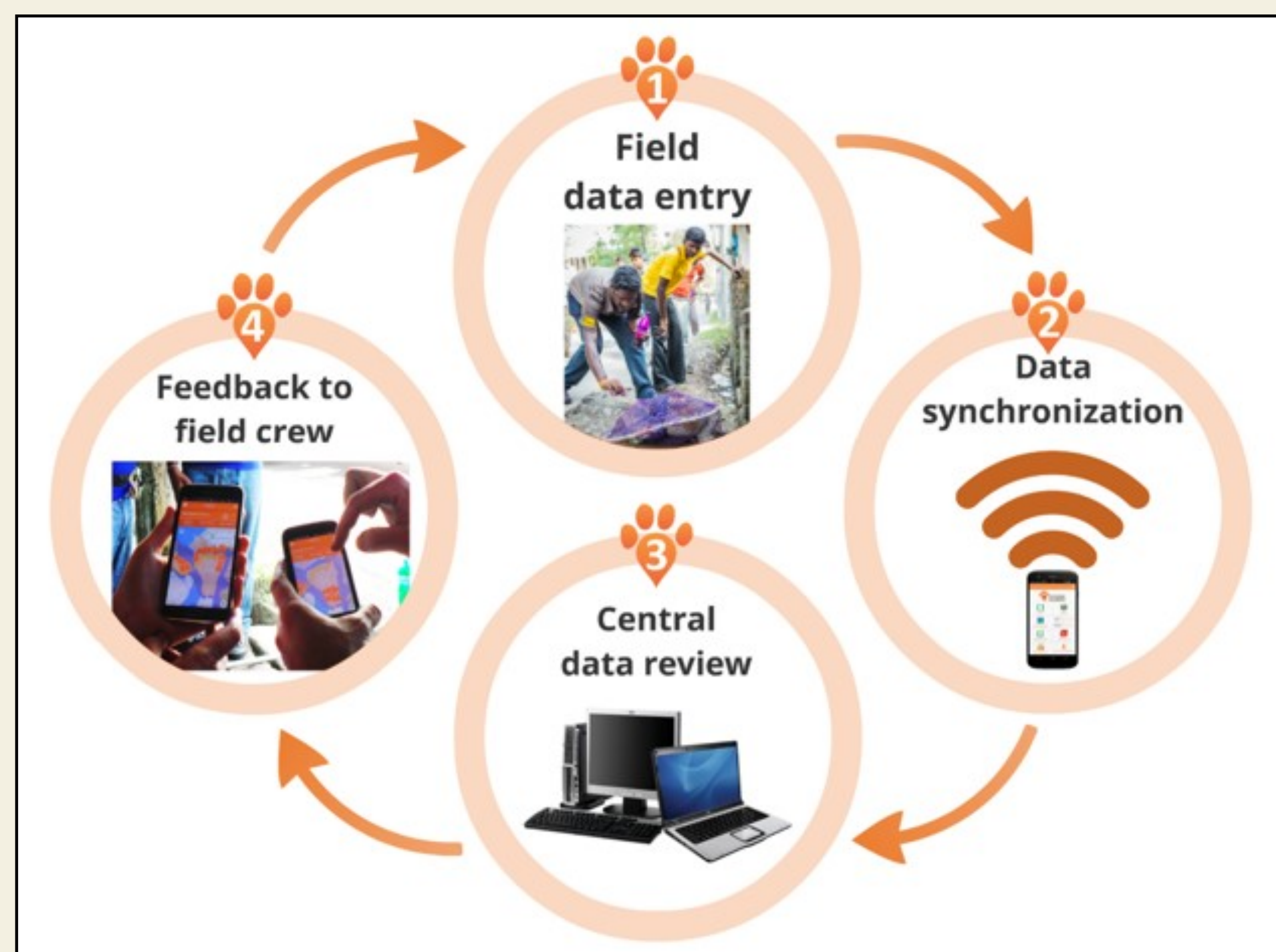


Figure 1 : Illustration of data flow using the app within a project

1) Project Management

Homologous vaccination of the free roaming dog population across a geographic area is important to the efficient elimination of the rabies virus. Coordinating vaccination efforts across large areas can be challenging, particularly where there are no distinct geographic boundaries, landmarks or available road names. The use of polygon boundaries in Google Maps enables the systematic direction of field teams region-by-region in a vaccinate-assess-move approach. Daily review of post-vaccination surveys allows the project manager to identify areas which need further vaccination and adjust the direction of teams on a daily basis and therefore ensure thorough coverage (Fig 3).

Maps displaying boundaries selected by the project manager are displayed on the handsets, enabling teams to navigate door-to-door whilst rapidly adding data at the time of dog vaccination or dog sighting (Fig 3). Optional satellite image overlay enables for assessment of the surrounding area and identification of settlements which are not marked on Google Street Map.

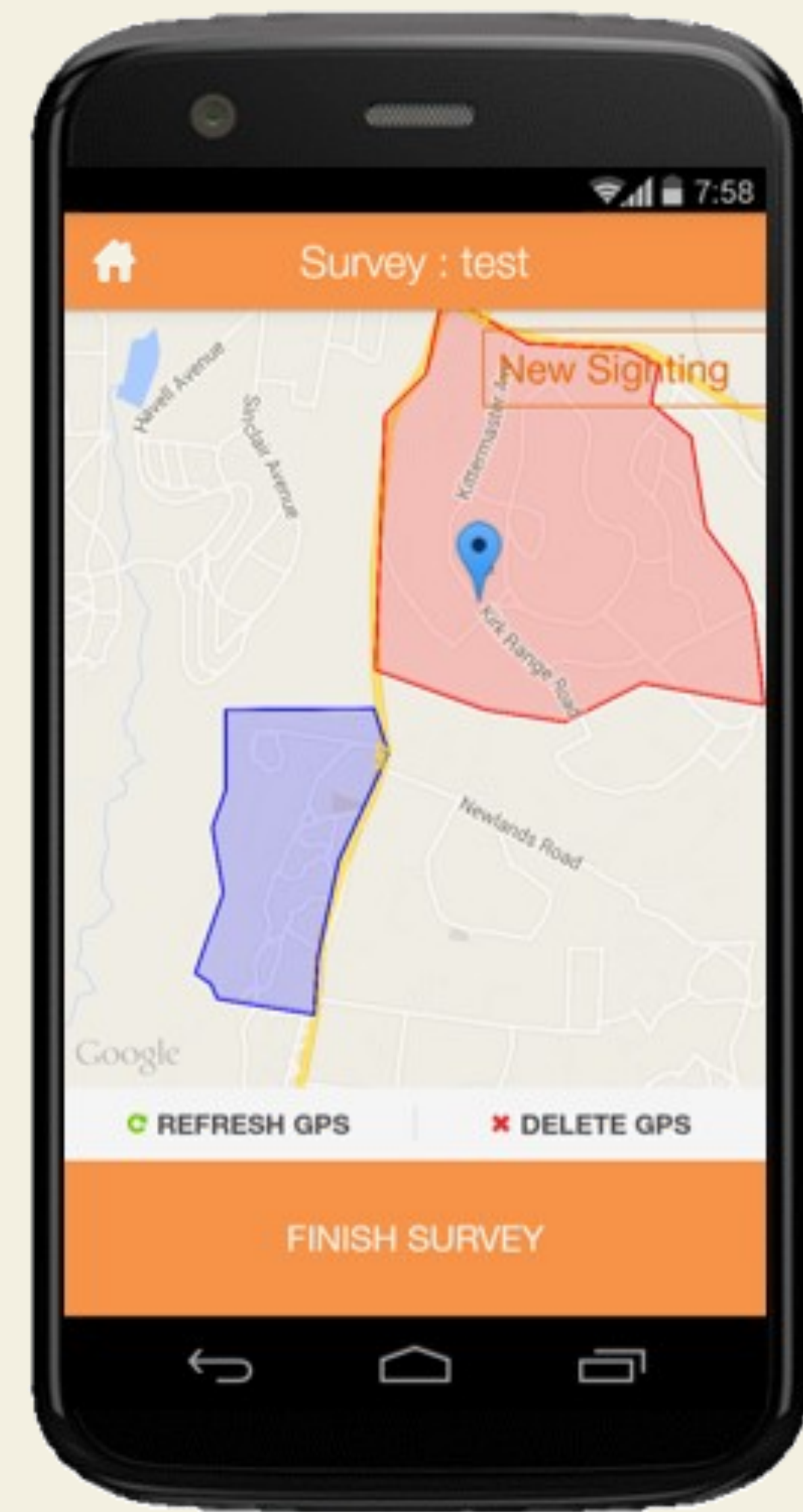


Figure 3 : Example of screen shot showing two vaccination region boundaries designated by the project manager.

2) Data Capture

Historically, the number of dogs vaccinated in a particular area may have been recorded on paper, however as the size of the project and number of vaccination teams increases, the routine gathering and centralization of this fundamental project information also becomes more difficult. Through smartphone technology data is captured offline in the field and subsequently synchronized to a cloud based server for real-time analysis (Fig 1).

The speed at which data can be gathered and digitally centralised provides greater opportunity for studying dog population dynamics and ecology as a by-product of mass dog vaccination.

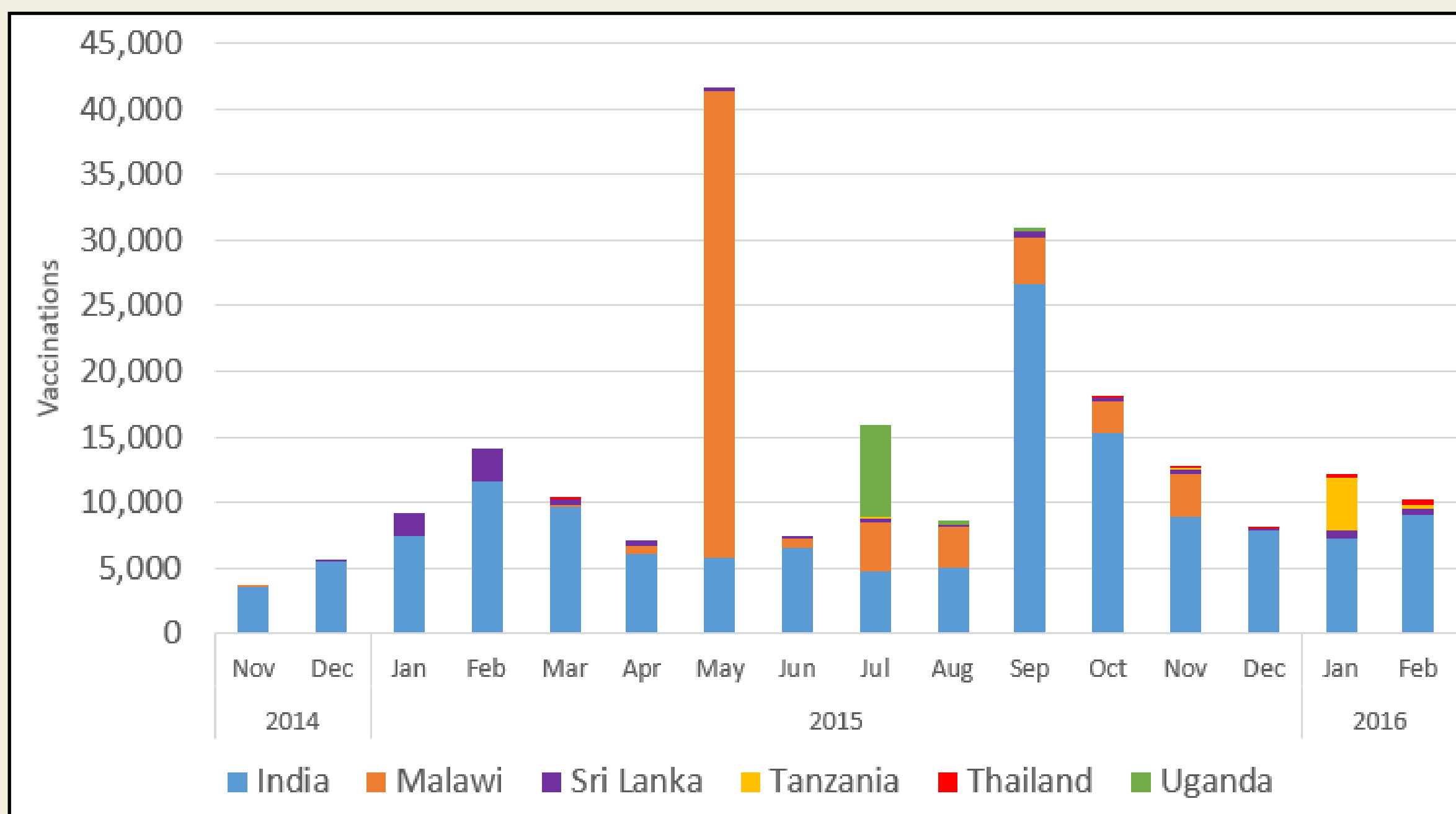


Figure 2 : Table of vaccinations recorded on the Mission Rabies App

3) Stakeholder Engagement

Communicating a clear solution to the rabies problem to national and local government can be challenging, particularly where previous efforts have failed to result in a measurable impact. Due to the remote nature of the field work, it can also be difficult to verify that the reported work has actually been conducted and therefore satisfy funders, supported and other stakeholders. Data capture through the Mission Rabies App has enabled clear presentation of the work and rapid illustration of activities through mapped vaccination data and day-by-day team paths (Fig 4). In the Mission Rabies Goa project this clarity has contributed to securing support from the Government of Goa, who provided a 50% grant for the state wide campaign in 2015.

Conclusion

The work done using the Mission Rabies App over the past 18 months in multiple rabies endemic settings demonstrates the versatility and potential for mobile technology to improve monitoring and evaluation of rabies control interventions on a larger scale. Development is ongoing and further study is needed to assess the cost-effectiveness of different approaches and data collection methods.

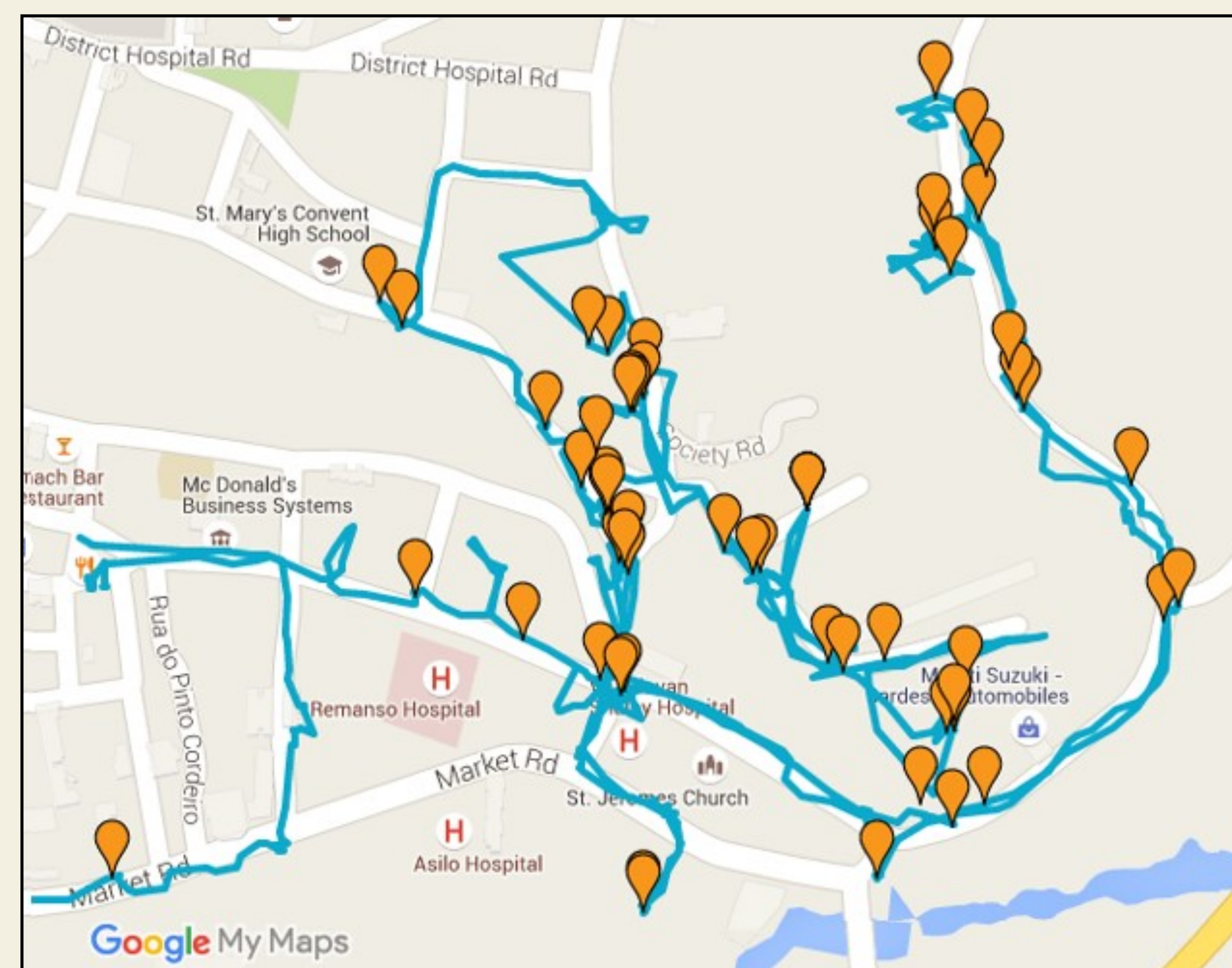


Figure 4 : Example map presenting GPS vaccination data and team path, helping to clearly report work to stakeholders.

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